Docket No.: 070759-0043 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Customer Number: 20277
Yasuhiro WATANABE, et al.	:	Confirmation Number: 4618
Application No.: 10/575,680	:	Group Art Unit: 2828
Filed: April 13, 2006	:	Examiner: ZHANG, Yuanda

For: TWO-BEAM SEMICONDUCTOR LASER APPARATUS

DECLARATION UNDER 37 C.F.R. § 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Yasuhiro Watanabe, declare as follows:

1. I received a bachelor's degree in Electronic Engineering from Osaka Prefecture University.

2. My field of specialty is semiconductor laser devices.

3. Since 1981 I have been employed by Sanyo Electric Co., Ltd. Photonics Division.

4. I have been working in the field of design and development of semiconductor laser devices for the past 27 years.

5. I am a coinventor of U.S. Patent Application Serial No. 10/575,680, TWO-BEAM SEMICONDUCTOR LASER APPARATUS, filed October 12, 2004 (the present invention).

6. I have read and am familiar with the disclosure of the above-captioned patent application. I understand the bases of rejection set forth in the Office Action mailed on November 19, 2008. I have read and am familiar with the counterpart Japanese publications to the publications cited in the rejections of the claims: Abe (U.S. Patent App. Pub. No. 2002/0021725; counterpart JP Patent App. Pub. No. 2002-057404), Ikeda (U.S. Patent App. Pub. No. 2001/0050531; counterpart JP Patent App. Pub. No. 2001-230502), and Honda et al. (U.S. Patent No. 6,885,076; counterpart PCT Pub. No. WO02/07275).

I. The Office Action has not accurately determined the scope and content of Abe

7. I understand that a key factual inquiry in rendering a legal determination of obviousness involves, among other steps, determining the scope and content of the prior art.

8. Based on my experience in the field, it is clear that the Office Action has interpreted Abe in a manner that does not accurately reflect the scope and content of the Abe disclosure, or of the art at the time of invention. Based on my expertise in the field, the manner in which sections 2 and 5 of the Office Action read paragraph [0137] of Abe does not accurately reflect what is illustrated in FIG. 8A of Abe. Thus, the Office Action has not rendered an accurate determination of the scope and content of the prior art as illustrated by Abe.

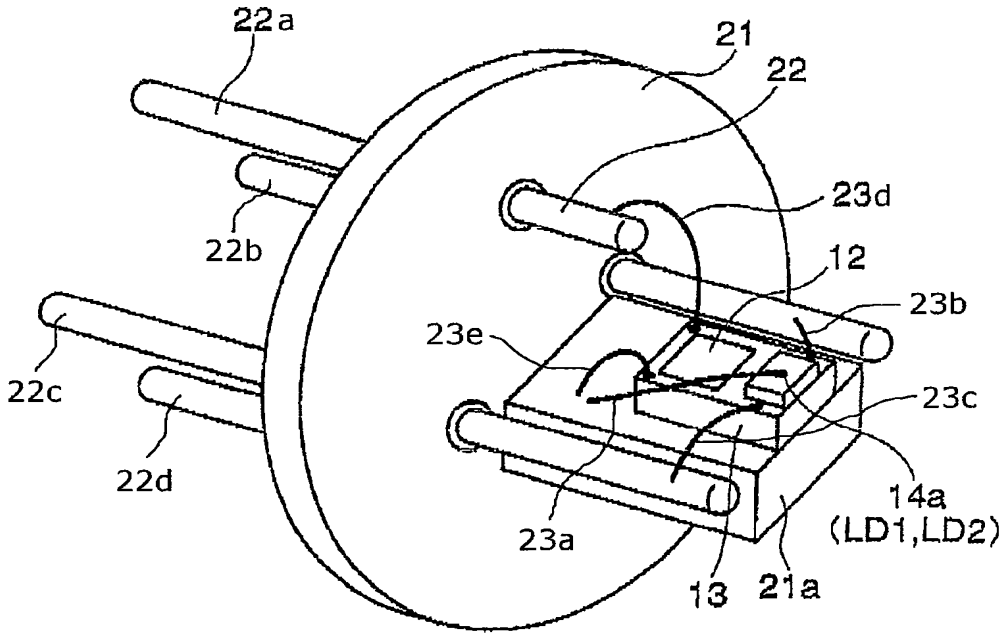
9. Abe, paragraph [0135], indicates that FIG. 8A shows an example of a mounting of the monolithic laser diode 14a, shown in FIG. 7, in a CAN package. Abe offers a cursory and incomplete description of the device shown in FIG. 8A. Further, it is noted that inconsistent numbering is used to describe features commonly depicted in FIGS. 7 and 8A of Abe. Paragraph [0137] of Abe states, in its entirety:

> Furthermore, a terminal 22 is provided passing through the base 1 and connected by a lead 23 to the above first and second laser diodes (LD1 and LD2) or to the PIN diode 12. A drive power is supplied to the respective diodes.

10. The hypothetical person of ordinary skill in the art would have had a bachelor's degree in engineering or physics and at least 3 years of experience in developing semiconductor laser devices. One of ordinary skill in the art would have understood the sentence "a terminal 22 is provided passing through the base 1 and connected by a lead 23 to the above first and second laser diodes (LD1 and LD2) or to the PIN diode 12" to be literally inaccurate. The above sentence, if read literally, is inconsistent with what is shown in FIGS. 7, 8A, and 8B, and other portions of Abe.

11. Below is a copy of FIG. 8A from Abe, in which further reference numeral labels have been added to more clearly identify features shown in FIG. 8A.

FIG. 8A



The above drawing shows a CAN mounted monolithic laser diode, in which the CAN package includes "a protruding portion 21a provided on a disk-shaped base 21" (paragraph [0136]), terminals 22a, 22b, and 22c which each pass through base 21 (*see* paragraph [0136] ("terminal 22 is provided passing through the base")), and terminal 22d which is electrically connected to protruding portion 21a. Monolithic semiconductor laser 14a, comprising laser diodes LD1 and LD2, is mounted on semiconductor block 13, which includes PIN diode 12 (paragraph [0139]). A number of leads provide electrical connections. Specifically, lead 23a, which corresponds to lead 46a shown in FIG. 7, electrically connects "the n-electrode 46 common to the two laser diodes (LD1 and LD2)" (paragraph [0134]) to terminal 22d. Lead 23b, which corresponds to lead 13b in FIG. 7, is "for connecting the p-electrode 45 of the first laser diode LD1" (paragraph [0134]), and is clearly shown in both figures as being wire-bonded to the side of laser diode LD1. Lead 23c, which corresponds to lead 13c in FIG. 7, is "for connecting the p-electrode 45 of the second laser diode LD2" (paragraph [0134]), and is clearly shown in both figures as being wire-bonded to the side of laser diode LD2. Lead 23d connects a first electrode of PIN diode 12 to terminal 22a "to sense laser lights emitted to a rear side of the first and second laser diodes (LD1 and LD2)" (paragraph [0140]). Lead 23e connects a second electrode of PIN diode 12 to protruding portion 21a, such that protruding portion 21a, terminal 22d, the n-electrode 46 common to the two laser diodes (LD1 and LD2), and the second electrode of PIN diode 12 are commonly connected.

12. One of skill in the art would have understood that paragraph [0137] of Abe is not a careful and accurate description of the device shown in FIG. 8A, and the text refers to the terminals 22a-22c in the aggregate as "a terminal 22" and leads 23b, 23c, and 23d in the aggregate as lead 23. One of skill in the art would have understood that the use of the singular

article "a" is inaccurate, and that Abe does not disclose, using the reference numerals shown above, that the single lead 23d is to both first and second laser diodes LD1 and LD2. Page 2, line 10 of the Office Action incorrectly asserts that such a configuration is "shown in figure 8A" – instead, paragraph [0137] fails to accurately describe what is shown in FIG. 8A.

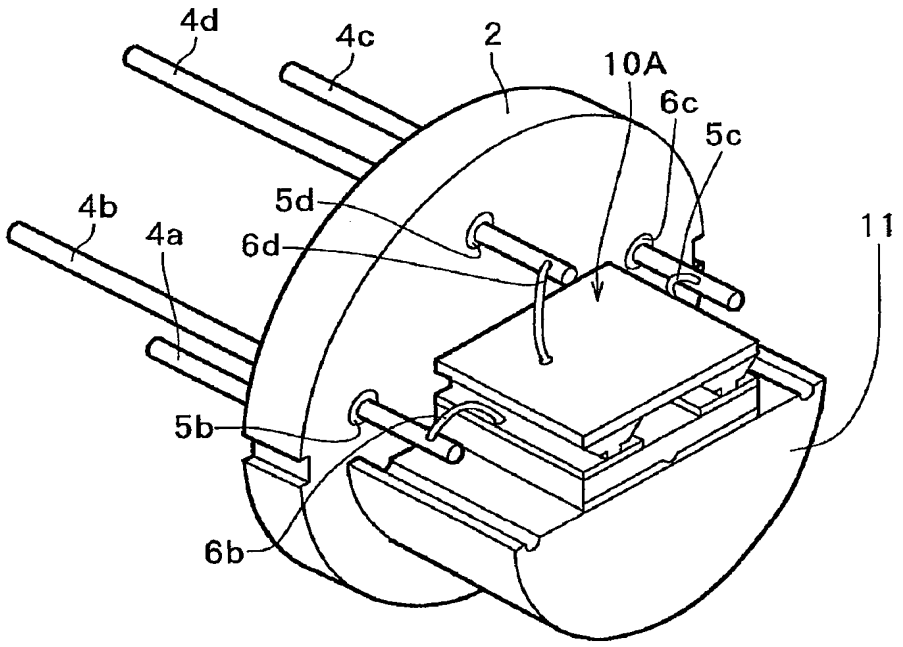
13. Additionally, the reading of paragraph [0137] espoused by the Office Action is inconsistent with the Office Action itself. At page 3, lines 1-4, the Office Action states that "Abe discloses . . . first and second semiconductor laser elements (LD1 and LD2) that can be driven independently." However, if, as page 3, lines 11-12 of the Office Action states, a single lead 23 (i.e., lead 23d, as labeled above) were "connected to both the first and second laser diodes" via electrodes 13a, and n-electrode 46 is also "common to the two laser diodes (LD1 and LD2)" (paragraph [0134]), then laser diodes LD1 and LD2 could not be driven independently, as their cathodes would be commonly connected and their anodes would be commonly connected. The simple conclusion, appreciable to one skilled in the art is that paragraph [0137] does not accurately describe FIG. 8A.

14. For similar reasons the literal reading of paragraph [0137] proposed by the Office Action is inconsistent with other portions of Abe. As pointed out in paragraph 11 above, FIGS. 7 and 8A conflict with the proposed reading of paragraph [0137], as separate leads and terminals are clearly shown in the drawings. Additionally, Abe, paragraphs [0140] and [0156] each describe "the drive currents of the first and second laser diodes (LD1 and LD2)" – in other words, the use of independent drive currents for the two laser diodes. The reading of paragraph [0137] proposed by the Office Action conflicts with this description.

15. To one of skill in the art, the inconsistency of paragraph [0137] with the remainder of Abe would have led to the conclusion that paragraph [0137] is simply a terse and inaccurate description of the device shown in FIG. 8A. In particular, one of skill in the art would have recognized that the single lead labeled 23 in FIG. 8A is connected to PIN diode 12, and not to either, let alone both, of laser diodes LD1 and LD2.

II. Ikeda further demonstrates that the Office Action misreads Abe, paragraph [0137]

16. As further evidence of the state of the prior art, the Office Action cites Ikeda. However, unlike Abe, Ikeda provides a more detailed explanation of the figure, both by way of more fully labeling the features depicted therein, as well as providing a more detailed explanation in the specification. A copy of Ikeda, FIG. 5 is provided below:



The correspondence between Ikeda, FIG. 5 and Abe, FIG. 8A would have been readily apparent to those skilled in the art. In fact, the labeling of Abe, FIG. 8A provided in section 11 above more clearly demonstrates the similarities in the disclosed features. Specifically, Ikeda's pins 4b and 4c respectively correspond to Abe's terminals 22b and 22c (as labeled in section 11 above), and Ikeda's wires 6b and 6c respectively correspond to leads 23c and 23b (as labeled in section 11 above).

17. In both Abe and Ikeda, a two-beam semiconductor laser element is mounted in a CAN package. In both references, bonding wires are attached from terminals passing through the base of the CAN package to electrodes for each of the constituent laser elements, at bonding points that are disposed lateral to the semiconductor laser element. Also, in each reference, separate terminals are respectively individually connected to the constituent laser elements. Thus, both Ikeda and Abe demonstrate a conventional approach to attaching bonding wires to electrodes that extend lateral to, rather than behind, the semiconductor laser beam element.

III. The present application also describes the prior art in a manner consistent with this declaration

18. Further, the present application itself describes essentially the same device shown in Abe, FIG. 8A. The similarities between FIGS. 6 and 7 of the present application to FIGS. 7 and 8A would have been readily apparent to those skilled in the art. These figures are reproduced below, to demonstrate the similarities.

FIG.6

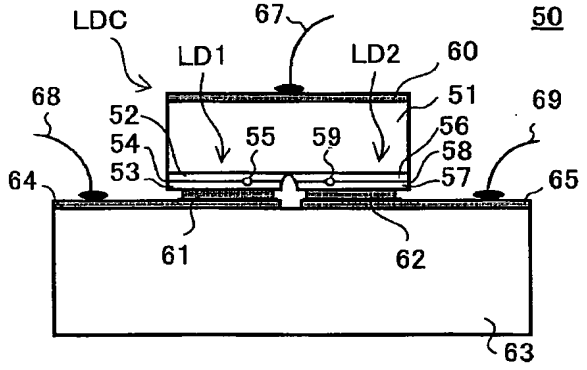
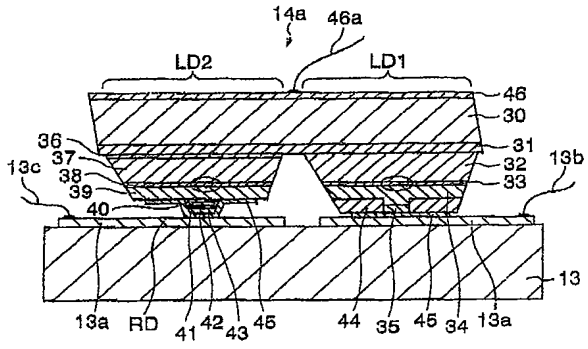


FIG. 7



As can be seen above, the two devices shown above are very similar. For example, the location of electrodes 60, 64, and 65, with corresponding bond wires 67, 68, and 69, is similar to electrodes 46, 13a (left), and 13a (right), with corresponding bond wires 46a, 13c, and 13b. These features are shown, to a greater or lesser degree, in the respective perspective views below.

FIG.7

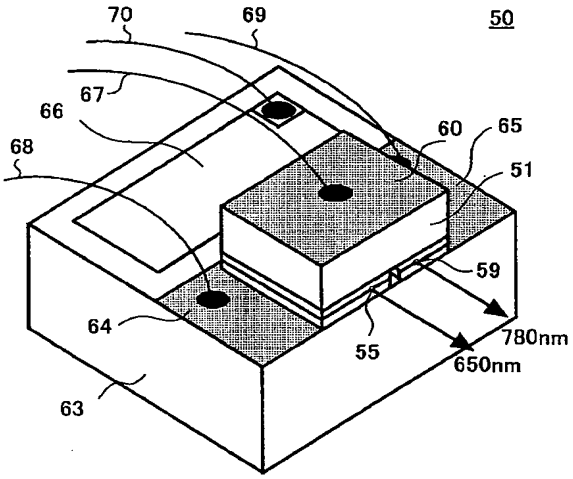
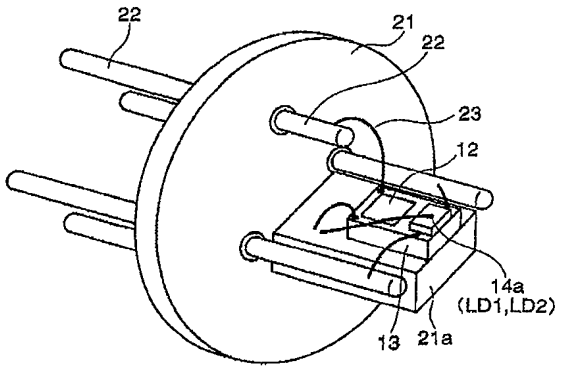


FIG. 8A



Abe, FIG. 8A shows a two-beam semiconductor laser device including a photodiode, mounted in a can package, that is essentially the same as the device shown in FIG. 7 of the present application (although FIG. 7 does not show a bond wire connection for a second electrode of photodiode 66 that corresponds to lead 23e in section 11 above). Paragraphs [0015] and [0016] of the present application specifically describe a CAN packaging for device 50, such that it would be mounted in the same manner shown in Abe, FIG. 8A.

19. Thus, the Abe device is consistent with the prior art described in the present application, which employed electrodes that were disposed lateral to, rather than behind, a two-beam semiconductor laser device. Such conventional devices failed to teach or suggest that "first and second electrode pads are formed to extend farther behind the two-beam

semiconductor laser element, and are wire-bonded behind the two-beam semiconductor element," as recited in claim 1 of the present application. Thus, conventional devices such as those shown in Abe and Ikeda fail to realize certain benefits for compactness and high-speed operation when mounted into a less expensive frame package.

20. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issuing therefrom.

January 30, 2009
Date

Yasuhiro Watanabe
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